

FIG. 1

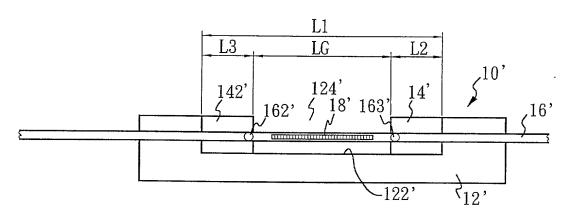


FIG. 2

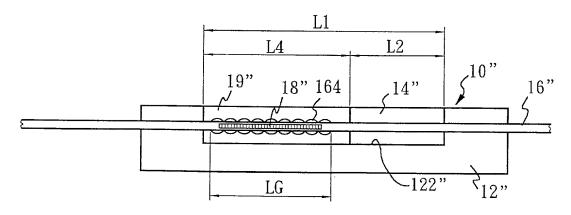
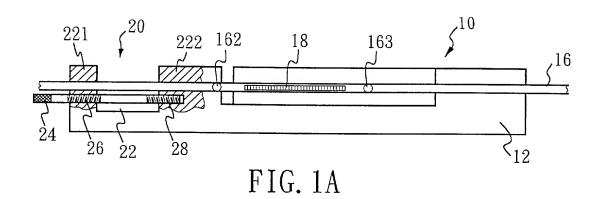
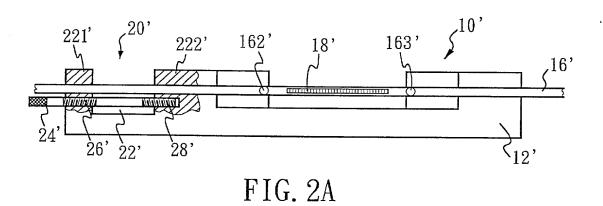
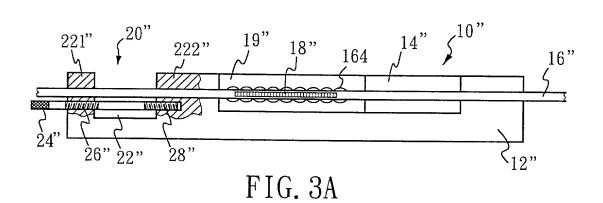


FIG. 3







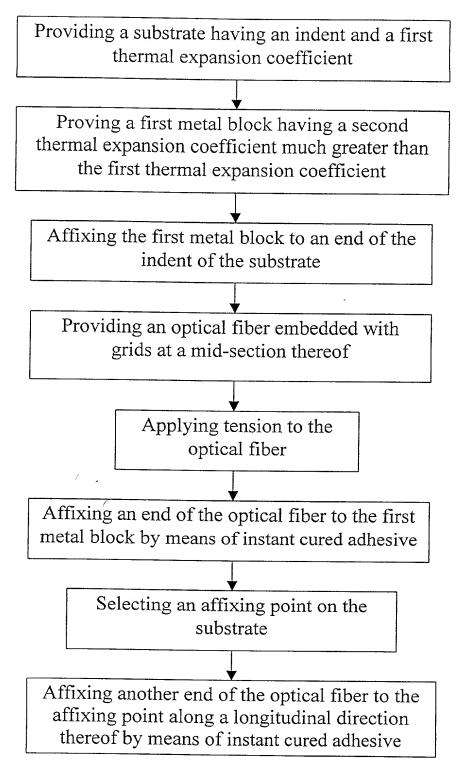


FIG. 4A

Providing a substrate having an indent and a first thermal expansion coefficient Proving a first metal block having a second thermal expansion coefficient much greater than the first thermal expansion coefficient Affixing the first metal block to an end of the indent of the substrate Providing an optical fiber embedded with grids at a mid-section thereof Affixing an end of the optical fiber to the first metal block by means of AB thermally cured adhesive Selecting an affixing point on the substrate Affixing another end of the optical fiber to the affixing point along a longitudinal direction thereof by means of AB thermally cured adhesive Curing the AB thermally cured adhesive and annealing the grids by placing the device under the thermal state for a period of time

FIG. 4B

Proving a first metal block having a second thermal expansion coefficient much greater than the first thermal expansion coefficient

Affixing the first metal block to an end of the indent of the substrate

Providing a second metal block having the second thermal expansion coefficient

Affixing the second metal block to another end of the indent of the substrate

Providing an optical fiber embedded with grids at a mid-section thereof

Applying tension to the optical fiber

Affixing an end of the optical fiber to the first metal block by means of instant cured adhesive

Selecting an affixing point on the second metal block

Affixing another end of the optical fiber to the affixing point along a longitudinal direction thereof by means of instant cured adhesive

Proving a first metal block having a second thermal expansion coefficient much greater than the first thermal expansion coefficient

Affixing the first metal block to an end of the indent of the substrate

Providing a second metal block having the second thermal expansion coefficient

Affixing the second metal block to another end of the indent of the substrate

Providing an optical fiber embedded with grids at a mid-section thereof

Affixing an end of the optical fiber to the first metal block by means of AB thermally cured adhesive

Selecting an affixing point on the second metal block

Affixing another end of the optical fiber to the affixing point along a longitudinal direction thereof by means of AB thermally cured adhesive

Curing the AB thermally cured adhesive and annealing the grids by placing the device under the thermal state for a period of time

Proving a metal block having a second thermal expansion coefficient much greater than the first thermal expansion coefficient

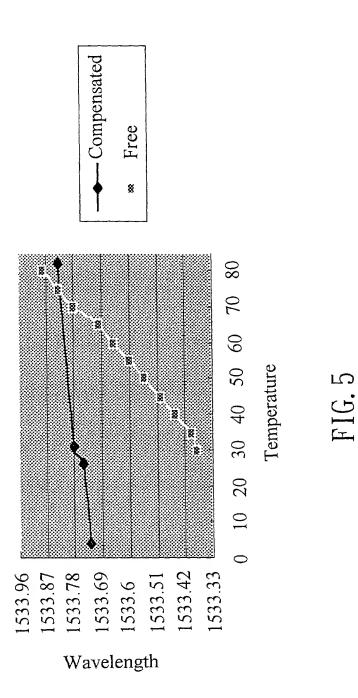
Affixing the metal block to an end of the indent of the substrate to form a space between the substrate and metal block

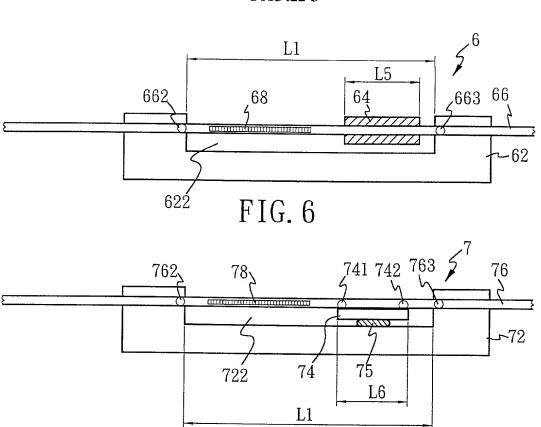
Providing a compensating block made of a pliable material of a lower rigidity than that of the metal block and the substrate

Affixing the compensating block within the space

Providing an optical fiber embedded with grids at a mid-section thereof

Affixing the optical fiber to compensating block along a longitudinal surface thereof such that the grids are located next to the compensating block





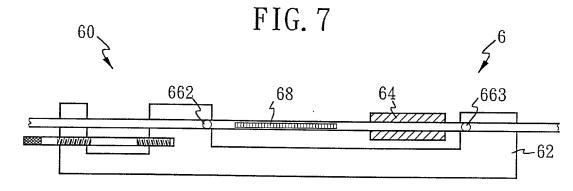


FIG. 6A

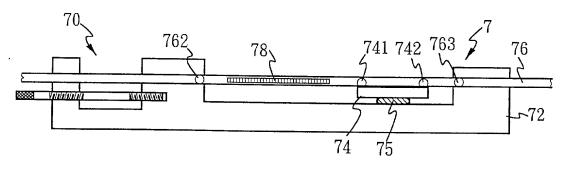


FIG. 7A

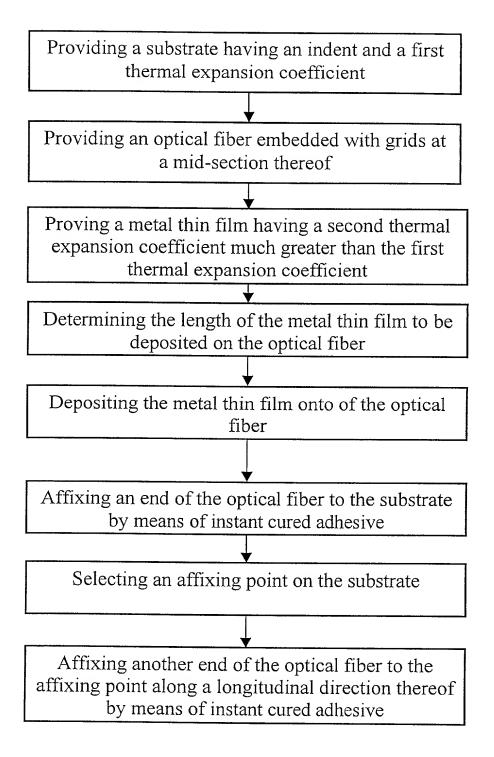


FIG. 8A

Providing a substrate having an indent and a first thermal expansion coefficient Providing an optical fiber embedded with grids at a mid-section thereof Proving a metal thin film having a second thermal expansion coefficient much greater than the first thermal expansion coefficient Determining the length of the metal thin film to be deposited on the optical fiber Depositing the metal thin film onto the optical fiber Affixing an end of the optical fiber to the substrate by means of AB thermally cured adhesive Selecting another affixing point on the substrate Affixing another end of the optical fiber to the affixing point along a longitudinal direction thereof by means of AB thermally cured adhesive Curing the AB thermally cured adhesive and annealing the grids by placing the device under the thermal state for a period of time

FIG. 8B

Providing a metal thin block having a second thermal expansion coefficient much greater than the first thermal expansion coefficient

Providing an optical fiber embedded with grids at a mid-section thereof

Affixing the metal thin block onto the optical fiber

Applying tension to the optical fiber

Affixing an end of the optical fiber to the substrate by means of instant cured adhesive

Selecting another affixing point on the substrate

Affixing another end of the optical fiber to the affixing point along a longitudinal direction thereof by means of instant cured adhesive

FIG. 8C

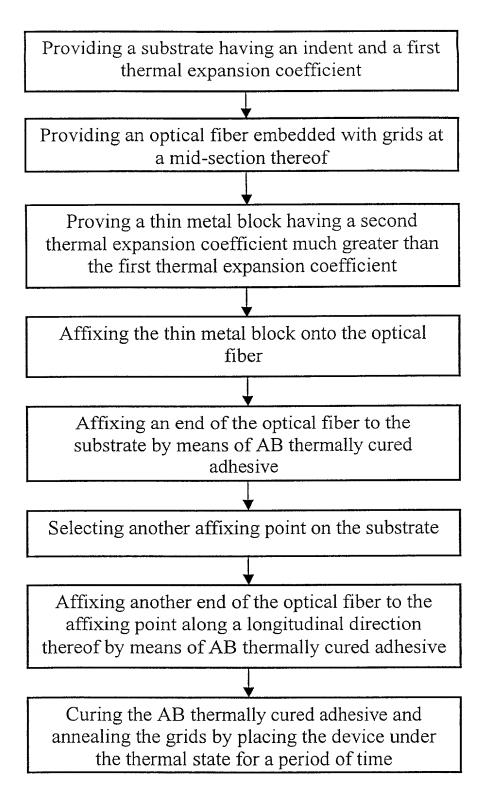


FIG. 8D

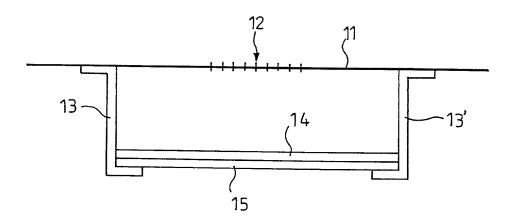


FIG.9 (PRIOR ART)

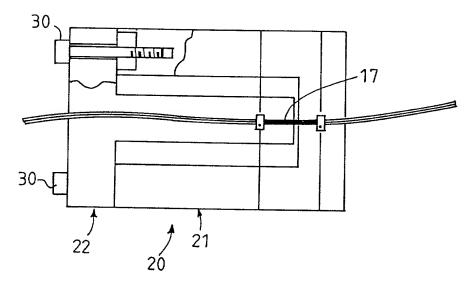


FIG.10 (PRIOR ART)